

Comparison of Observations with an Ephemeris by M. George Rümker, founded upon his Elements.

Place of Observ ⁿ	Aug ^t	Greenw. M.T. h m s	R.A. ° ' "	Obs ^d —Cal ^d . "	Decl. ° ' "	Obs ^d —Cal ^d . "
Altona	10	12 40 56.6	97 49 59.2::		+ 38 49 45	— 13
Hamburg	11	13 5 27.2	99 18 27.8	— 1.1	37 51 42.0	+ 0.9
Altona		13 6 57.9	18 40.0	+ 5.5	51 50.8	+ 13.8
Hamburg	13	13 26 47.7	102 21 35.6	+ 6.2	35 43 55.8	— 4.1
Altona	18	13 4 48.0	110 38 33.0	— 4.2	29 5 58.5	+ 5.1
Hamburg		13 20 12.0	39 45.6	— 0.2	5 6.6	+ 13.1
Hamburg G. R.		13 35 30.7	40 45.0	— 8.7	4 6.6	+ 12.5
Altona		13 52 6.9	42 4.3	— 3.6	2 50.9	+ 1.6
Berlin		14 0 0.1	42 8.5	— 34.5	2 19.9	+ 0.4
Hamburg	19	13 57 5.8	112 30 57.6	— 2.6	27 26 10.0	— 1.4
Altona		14 7 15.9	31 40.8	— 5.9		
Altona		14 15 13.7			24 55.8	— 0.4
Berlin		14 17 14.6	32 16.8	— 15.3	24 48.6	+ 1.0
Regent's Park...		14 18 31	32 23.0	— 15.7	24 39.6	— 2.8
Hamburg, G. R.		14 37 45.0	34 0.3	— 6.2	23 31.9	+ 8.4
Hamburg	22	14 15 0.5	118 17 38.4	— 11.2	22 0 5.1	— 2.0
Regent's Park...		14 58 29.0	21 39.6	+ 11.6	21 56 16.3	— 19.1
Hamburg	23	14 38 37.4	120 22 6.5	+ 0.0	19 57 56.5	— 0.9
Altona		14 49 38.9	23 7.7	+ 4.1	56 44.8	— 13.5
Hamburg	25	14 46 52.0	124 38 55.6	+ 2.8	+ 15 39 58.0::	— 23.0
Altona		14 58 35.9	40 12.7	+ 15.0	38 43.9::	— 33.8

ENCKE'S COMET.

An ephemeris of Encke's Comet for Greenwich mean midnight has been published by Lieut. Stratford, copies of which have been distributed very freely. Any Fellow of the Society can be supplied with a copy on applying to Mr. Williams.

CAMBRIDGE. Northumberland Equatoreal. (Prof. Challis.)

	Greenwich M.T. h m s	R.A. h m s	Obs ^d —Cal ^d . s	N.P.D. ° ' "	Obs ^d —Cal ^d . "	No. of Comps. Star. R.A. N.P.D.
1848.						
Sept. 2	13 30 6.5	3 32 16.54	+ 4.47	55 59 37.8	— 28.8	6 5 a
4	12 14 39.4	37 6.06	7.51	55 15 21.9	26.3	2 2 b
	12 34 8.1	6.69	6.10	14 57.8	31.2	2 2 c
	13 36 52.4	15.20	8.02	13 48.9	38.2	6 4 d
6	12 32 47.1	3 42 17.53	5.94	54 25 26.7	96.3	3 3 e
	12 49 38.8	20.91	+ 7.43	18.3	— 87.3	2 2 f

The observations are corrected for parallax, and compared with the ephemeris published by Lieut. Stratford. The authorities for the places of the known stars are the following :—

a = B.A.C. 1132 b = Piazzi, iii. 194 c = H.C. 7016 f = B.A.C. 1228

The assumed apparent R.A. and N.P.D. of the stars d and e , determined by equatoreal comparisons with b and f respectively, are,—

	^h	^m	^s	[°]	[']	["]
d	3	36	21.12	55	15	58.0
e	3	46	55.27	54	25	59.7

The comet had the appearance of an extremely faint nebulosity of very large diameter, and its point of maximum brightness was so difficult to fix upon, that the observations are entitled to very little weight. The magnifying power employed was 120.

SOUTH VILLA. Equatoreal. (MM. Bishop & Hind.)

	Greenwich M.T.			R.A.			Decl.		
1848.	^h	^m	^s	^h	^m	^s	[°]	[']	["]
Sept. 3	15	7	49	3	34	53.5	+ 34	24	27
4	13	49	4	3	37	13.5	+ 34	46	10

Professor Colla saw the comet at Parma on Sept. 20th, with an excellent telescope of Lerebours, 4 French inches aperture. "It appeared like a faint round nebulosity, the light condensing towards the centre, with traces of scintillation throughout the mass." It was just visible in a telescope by Gilbert of 2.5 inches aperture."

It was seen at Hartwell on Sept. 22d and 25th: "it was so faint as to require a 6-inch object-glass and a practised eye. It appeared in a dull nebulous spot, about 3' in diameter, rather oblong, a little condensed towards the centre, and shaded off indefinitely at the edge." The corrections to be applied to Lieut. Stratford's ephemeris to satisfy the Hartwell Observations are,—

$$\text{R.A.} + 26^s \quad \text{Decl.} - 1' 28''.$$

Professor Challis' method of correcting Equatoreal Observations for Refraction.

The corrections for refraction in differential equatoreal observations made at the Cambridge Observatory, when the hour-angles for the star of comparison and object compared are the same, are calculated by the formulæ given in p. 188, vol. i. of Bessel's *Astronomische Untersuchungen*. In the triangle of which the angular points are at P the pole of the heavens, Z the zenith of the observer, and S the place of the star; draw from Z a perpendicular ZQ on PS. Let $d' - d$ be the apparent excess of the north polar distance of the object compared, above that of the star of comparison, and Δ the true north polar distance of the latter, or, more correctly, the mean of the north polar distance of the two objects; and let $\mu' - \mu$ be the excess of right ascension given by the difference of times of transit. Then

$$\text{Correction applied to } d' - d = \kappa (d' - d) \sec^2 (\Delta - PQ)$$

$$\text{Correction applied to } \mu' - \mu = \kappa (d' - d) \sec^2 (\Delta - PQ) \cdot \frac{\tan QZ}{15} \cdot \frac{\cos (2\Delta - PQ)}{\sin^2 \Delta}$$